SETUP & INSTALLATION MANUAL

FOR

DOOSAN DL 200 TC

TOOL CARRIER

BY

INTERLUBE

A TIMKEN Brand

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Ports/Bearings Fitting and Lubrication Charts

Primary Divider Valve Section:-

Output Port No.	Feeds Valve No.	SPL06K Primary Divider Valve
Port 1	2	To SPL12 Divider Valve
Port 2	3	To SPL12 Divider Valve
Port 5	1	To SPL10 Divider Valve

Steering Section:-

Output Port No.	Feeds Bearing No.	SPL10 Secondary Valve (Valve 1)
Port 1	29	Lift Arm Pivot Ram R.H. Side
Port 2	28	Rear Axle Pivot L.H. Side
Port 3	30	Lift Arm Pivot Ram L.H. Side
Port 4	27	Steering Ram R.H. Side
Port 5	31	Steering Ram R.H. Side
Port 6	26	Steering Ram L.H. Side
Port 7	32	Steering Ram L.H. Side
Port 8	25	Bottom Pivot
Port 9	33	Rear Axle Pivot R.H. Side

Bucket Section:-

Output Port No.	Feeds Bearing No.	SPL12 Secondary Valve (Valve 3)
Port 1	7	Lift Ram R.H. Side
Port 2	6	Lift Ram L.H. Side
Port 3	8	Bucket Pin R.H. Side
Port 4	5	Bucket Pin L.H. Side
Port 5	9	Bucket Pin R.H. Side
Port 6	4	Bucket Pin L.H. Side
Port 7	10	T-Bar Linkage R.H. Side
Port 8	3	T-Bar Linkage L.H. Side
Port 1	11	T-Bar Linkage L.H. Side
Port 2	2	T-Bar Linkage R.H. Side
Port 3	12	Push Ram L.H. Side
Port 5	1	Push Ram R.H. Side

Lift Section:-

Output Port No.	Feeds Bearing No.	SPL12 Secondary Valve (Valve 2)
Port 1	19	Lift Arm/Ram Linkage R.H. Side
Port 2	18	Centre Arm/Ram Linkage R.H. Side
Port 3	20	Lift Arm/Ram Linkage L.H. Side
Port 4	17	Lift Arm Linkage L.H. Side
Port 5	21	Front Of Prop Shaft
Port 6	16	Lift Arm Linkage R.H. Side
Port 7	22	Push Ram R.H. Side
Port 8	15	Lift Ram R.H. Side
Port 9	23	Push Ram L.H. Side
Port 10	14	Lift Ram L.H. Side
Port 11	24	Centre Arm/Ram Linkage L.H. Side
Port 12	13	Top Pivot

Note:

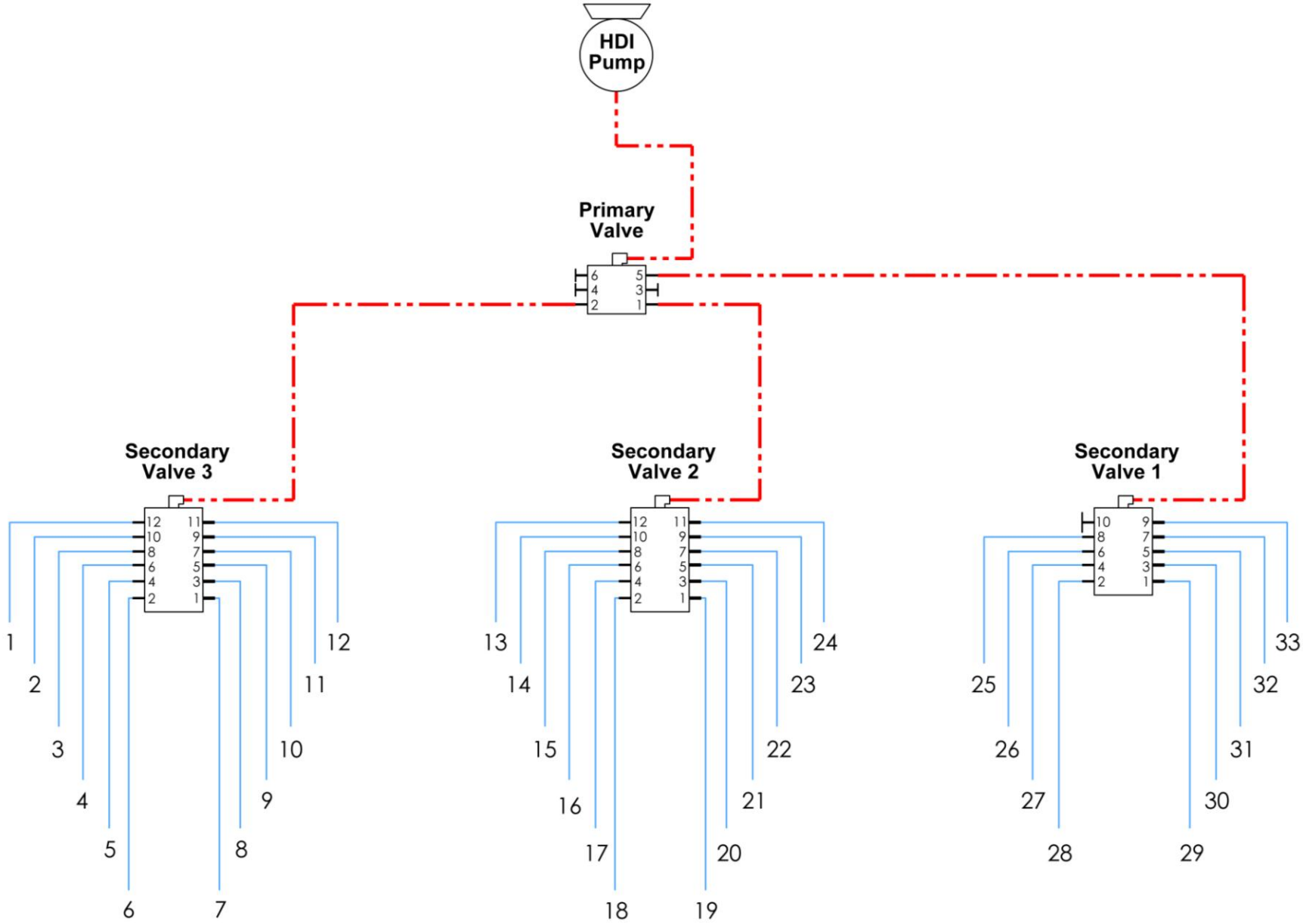
1. Caution:-

   Switch off the vehicle engine and remove the ignition key before starting work on the machine installation. This will prevent accidents occurring on site.

2. Before commencing installation of this lubrication system, it is important that the owner/operator ensures that all the bearings are pre-filled with the correct lubricant.

3. It is important to use recommended grease for the vehicle. DO NOT mix different types of grease together in Pump System. Keep them separate.
   (Acknowledge: Grade 2 grease is recommended for use in HDI Pump)

HDI System Installation Layout



List of Abbreviations

HDI Pump : 24Vdc HDI Pump

PB : SPL06K Primary Valve

Valve 1 : SPL10 Secondary Valve

Valve 2 : SPL12 Secondary Valve #1

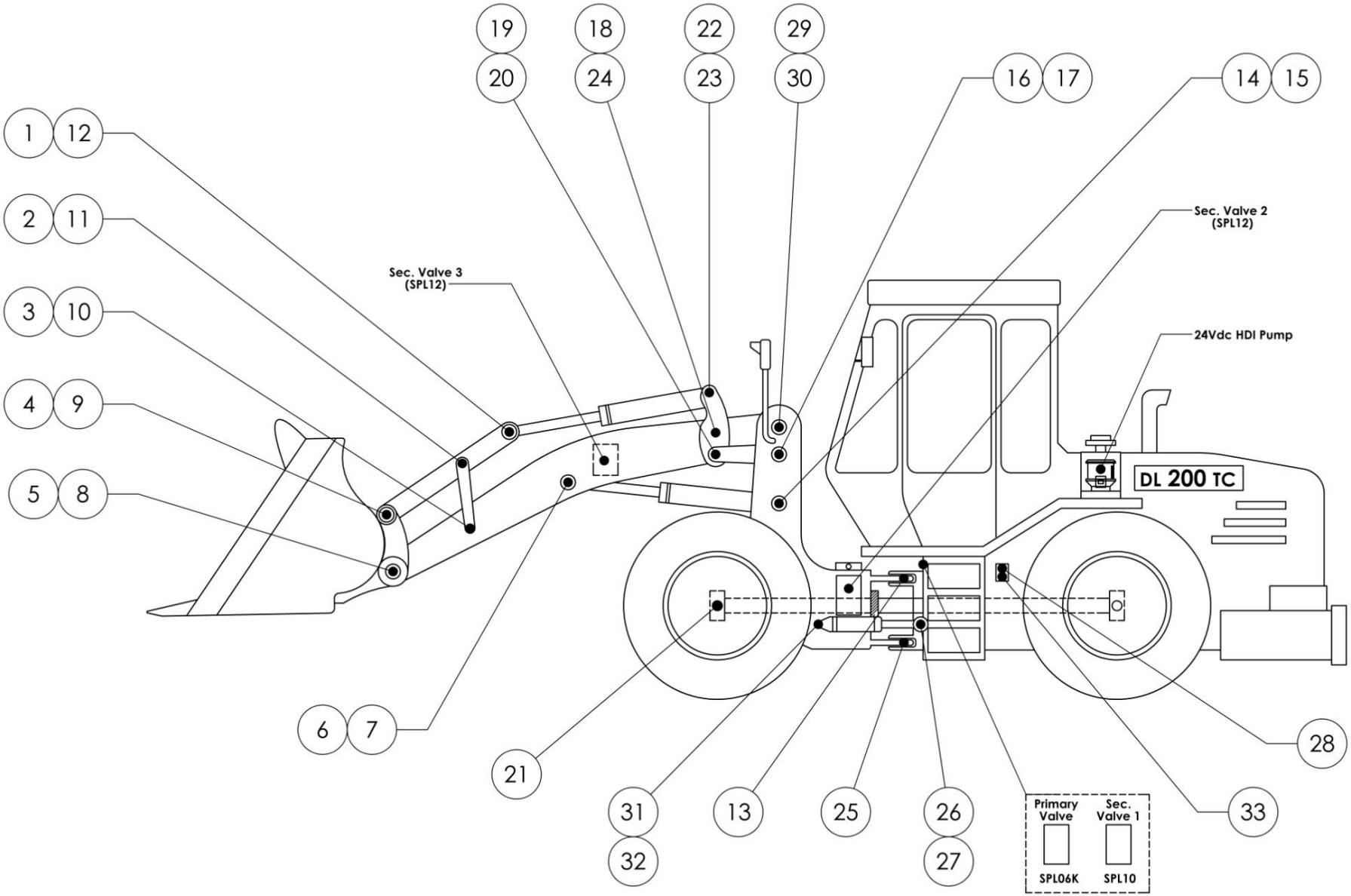
Valve 3 : SPL12 Secondary Valve #2

------- : Output To Secondary Divider Valves

——— : Output Grease Flow Line

① : Vehicle Bearing Point

Doosan DL 200 TC Tool Carrier System Layout



System Installation Guide

- Side angle view of the vehicle where 24Vdc HDI pump's located on the mud guard above the wheel adjacent to the engine cover.

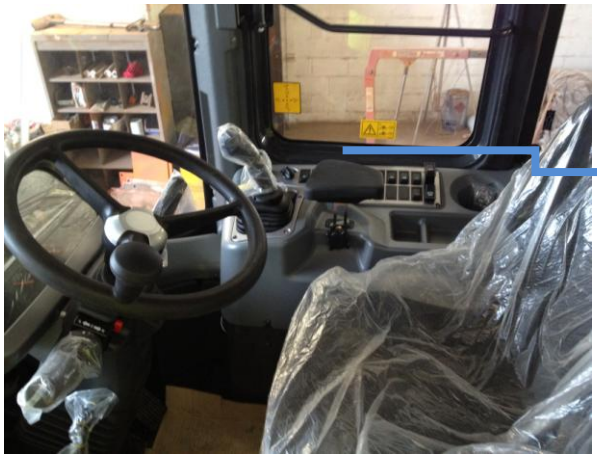
- Detail view of the vehicle where pump system's resting vertically on the external mounting "L" bracket attached above the mud guard

- Note that:-

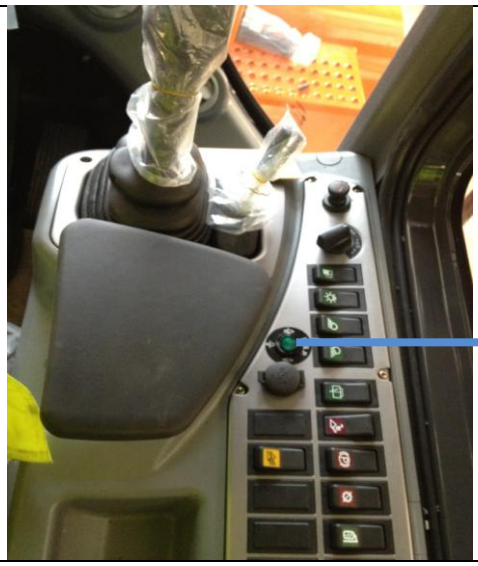
  ✓ HDI 2 Litres electric pump mounted on DL 200 TC logo/pump bracket. See HDI Set up Information

(ISF 294 Issue 12/09 for wiring and programming details)

- Location of Pump override/Ignition switch (24Vdc Green Push Button) has been placed next to the driver seat.



- Ignition Switch detail view can be found behind the manual ram joystick.



- <u>Note that:-</u>

  - ✓ To operate override switch, press button for approximately 5 seconds.
  - ✓ When pump operates, the light will be ON.

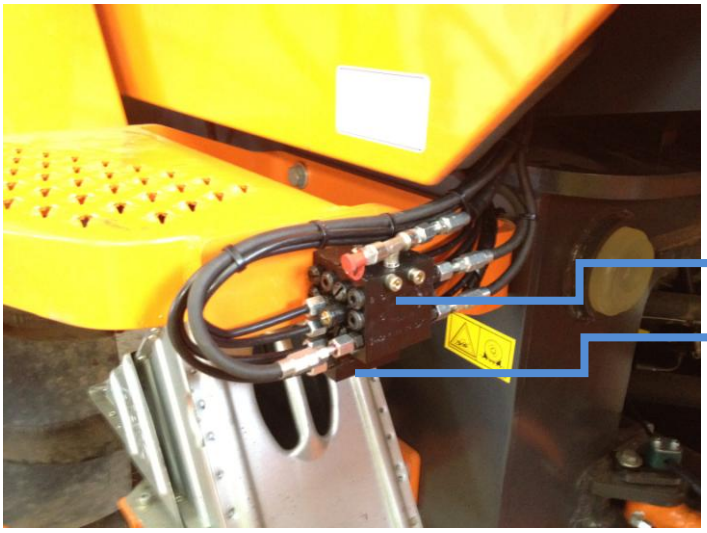
- Mounting positions of:

✓ SPL06-K Primary Valve (Top)

✓ SPL10 Secondary Valve 1 (Bottom)

✓ SPL12 Secondary Valve 2 (Right)

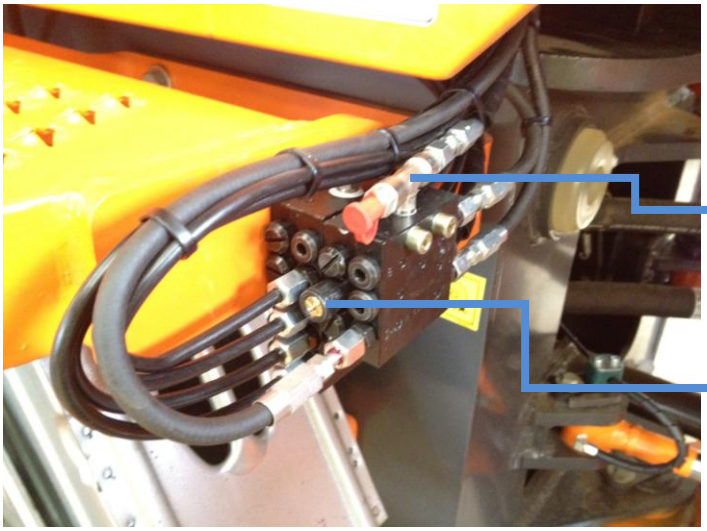
Next to DL 200 TC **Steering Ram**.



- Details view of:

✓ SPL06-K Primary Valve (Top)

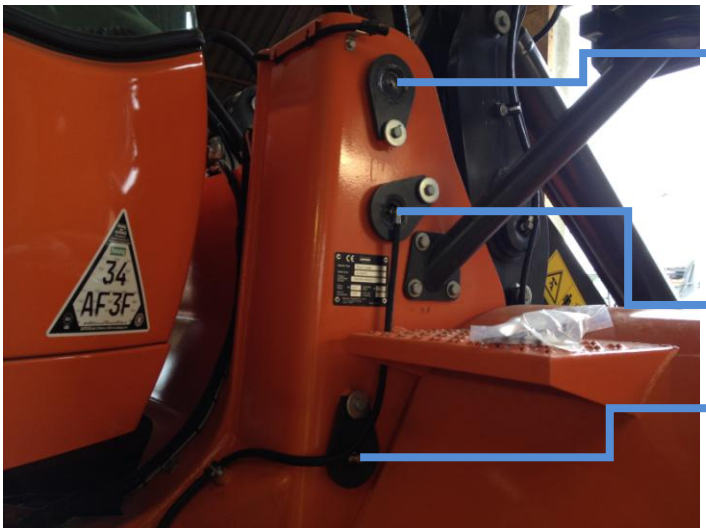
✓ SPL10 Secondary Valve 1 (Bottom)



- Detail side angle view of the divider valves.

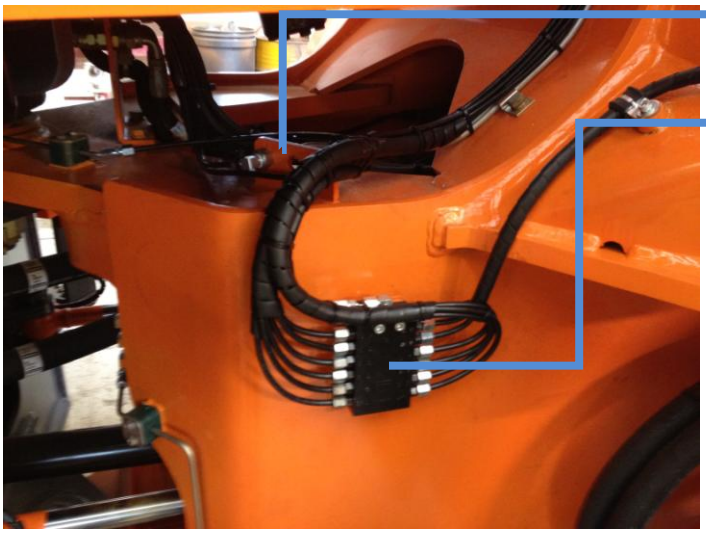
✓ High Pressure Grease Nipple's manually use to lubricated the system if the pump break down (Optional: Upon Customer Request)

✓ Indicator pin has been fed to SPL06-K primary valve inlet port 4



- Bearing points 29 and 30 lubricated from Secondary Valve 1.
- Lubricant Lubricated from SPL12 Secondary Valve 2:
  - ✓ Bearing points 16 and 17
  - ✓ Bearing points 14 and 15

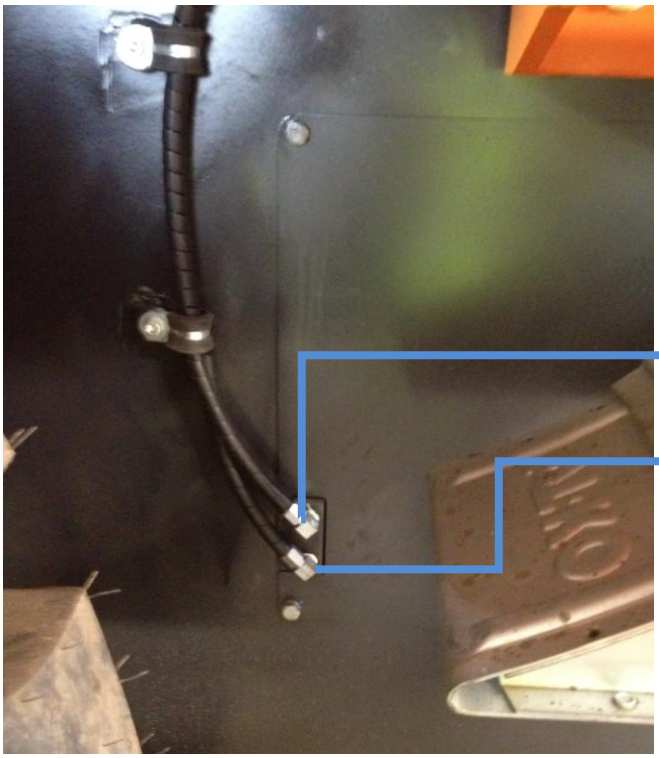
As shown in the following diagram.



- Remote Connection/Splitter bracket to bearing point 29 and 30
- Detail view of SPL10 (Divider Valve 2) which the fitting connectors were made to lubricate single shot on each outlet point.
- Note that:-
  - ✓ SPL divider valve lubrication systems. See SPL Range Brochure for further Information:

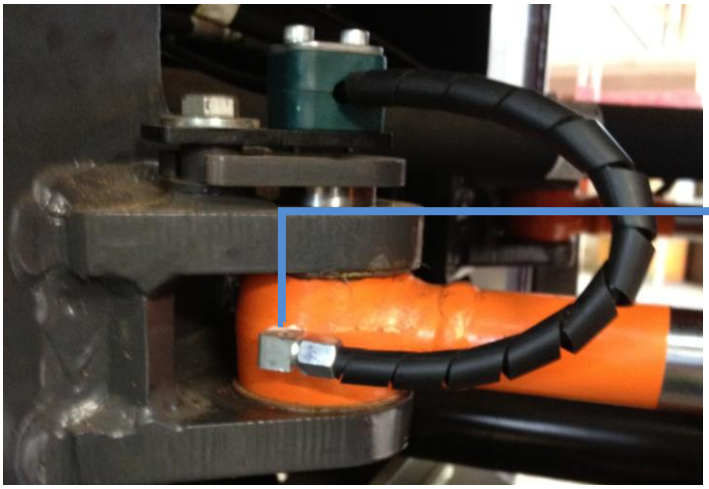
(SPL_SB_190112_V1 for Progressive Divider Valves details)

- There are 2 bearing points located at the back of vehicle wheel :
  - ✓ Top bearing point is Rear Axle Pivot Left Hand Side of the vehicle.
  - ✓ Bottom bearing point is Rear Axle Pivot Right Hand Side of the vehicle as shown in the diagram.

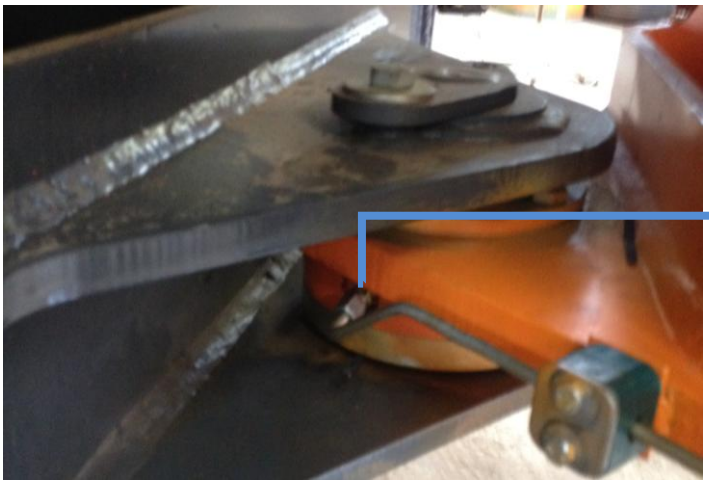


- SPL10 Secondary Valve 1 (Steering Section) :-
  - ✓ Output Port 2 to Bearing Point 28.
  - ✓ Output Port 9 to Bearing Point 33.

- Bearing points 13 lubricated from Secondary Valve 2.



- Bearing points 26 and 27 lubricated from Secondary Valve 1.

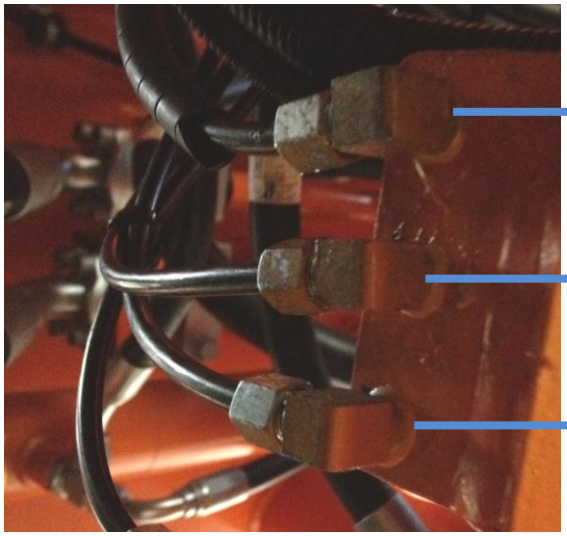


- Bearing points 25 lubricated from Secondary Valve 1.

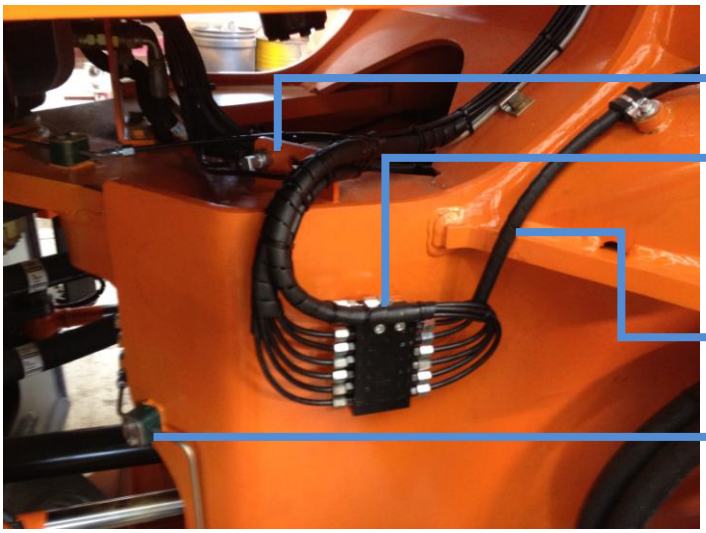
- Bearing points 32 lubricated from Secondary Valve 1.

- Bearing points 31 lubricated from Secondary Valve 1.

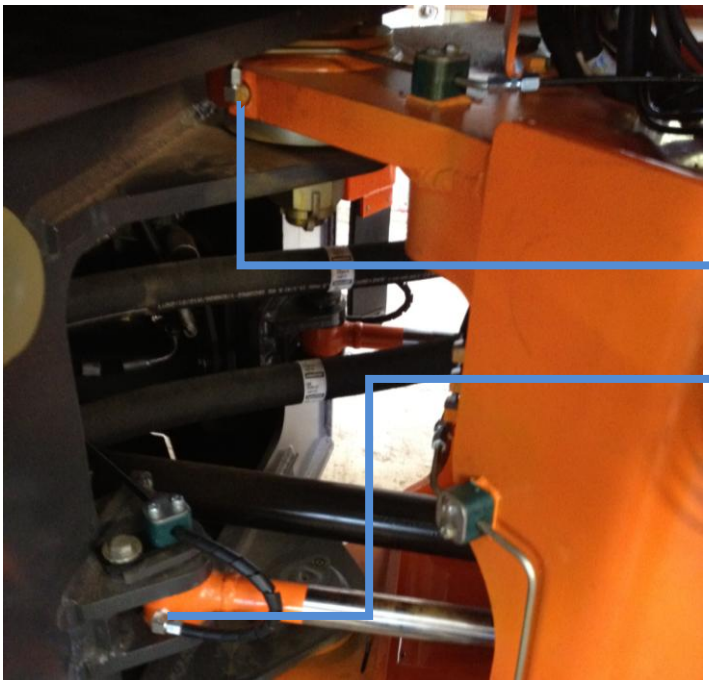
- Quick Hitch Bracket is used to split pipes when the vehicle is under maintenance so the operator/user is able to remove front steering from the vehicle body without cutting off the pipe linkage. Furthermore, it's also used to connect with different pipe size connector.



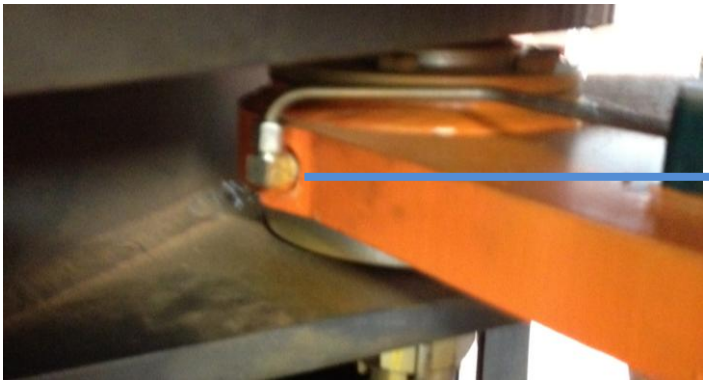
- Lubricant Lubricated from SPL10 Secondary Valve 1:
  - ✓ Bearing point 31
  - ✓ Bearing point 32
- Bearing points 21 lubricated from SPL12 Secondary Valve 2.



- Remote Connection / Splitter Bracket
- SPL12 Secondary Divider Valve 2 (Lift Section)
- Wiring Method:-
  - ✓ Protective Helix Plastic will wrap the loose pipe together
  - ✓ Tube Support come in handy to hold the tube in position

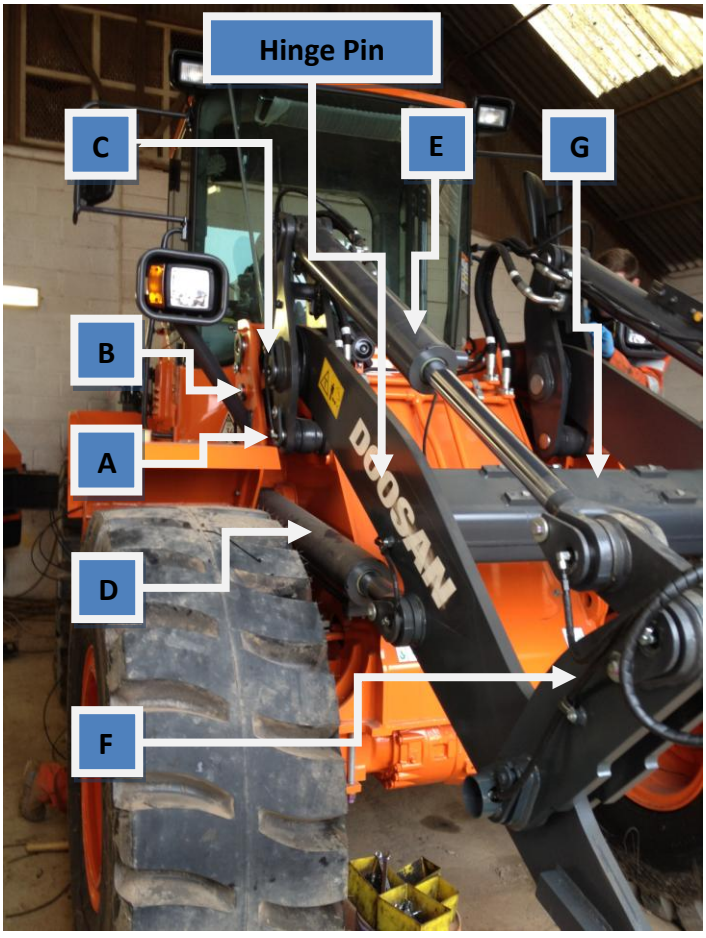


- Bearing points 13 lubricated from Secondary Valve 2.
- Bearing points 26 and 27 lubricated from Secondary Valve 1.



- Detail view of bearing points 13 lubricated from Secondary Valve 2.

- Bearing points 21 lubricated from Secondary Valve 2.



- Articulated Vehicle Lift Section:
    A. Lift Arm/Ram Linkage
    B. Centre Arm/Ram Linkage
    C. Lift Arm Linkage
    D. Lift Ram
    E. Push Ram

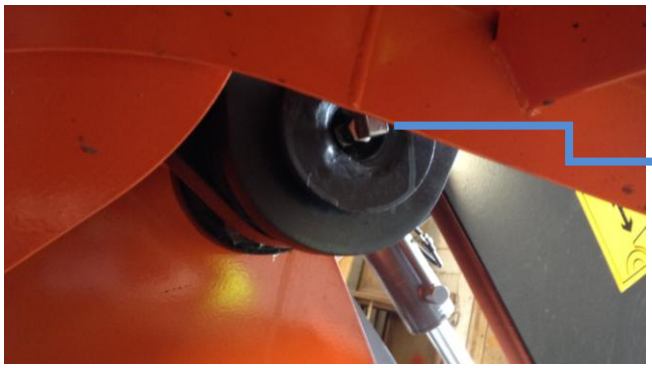
- Articulated Vehicle Bucket Section:
    F. Bucket Pin
    G. T-Bar Linkage

Details view of:

- Lubricant Lubricated from SPL12 Secondary Valve 2:
  - ✓ Bearing points 22 and 23
  - ✓ Bearing points 18 and 24
  - ✓ Bearing points 16 and 17

Side angle view of:

- Bearing points 14 lubricated from Secondary Valve 2.



Details view of:

- Bearing points 15 lubricated from Secondary Valve 2.

- Mounting positions of:

✓ SPL12 Secondary Valve 3

Located at DL 200 TC **Cross Member Bar**.

- Lubricant Lubricated from SPL12 Secondary Valve 3:

✓ Bearing points 1 and 12

✓ Bearing points 3 and 10

✓ Bearing points 4 and 9

✓ Bearing points 5 and 8

✓ Bearing points 6 and 7

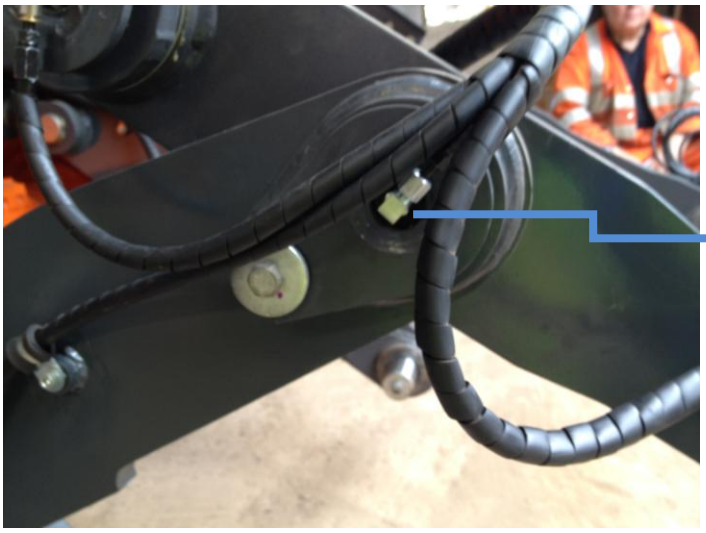
- Bearing points 6 and 7 lubricated from Secondary Valve 3.

- Lubricant Lubricated from SPL12 Secondary Valve 3:
  - ✓ Bearing points 1 and 12
  - ✓ Bearing points 3 and 10
  - ✓ Bearing points 4 and 9
  - ✓ Bearing points 5 and 8

- Bearing points 3 and 10 lubricated from Secondary Valve 3.

- Bearing points 1 and 12 lubricated from Secondary Valve 3.

- Bearing points 4 and 9 lubricated from Secondary Valve 3.



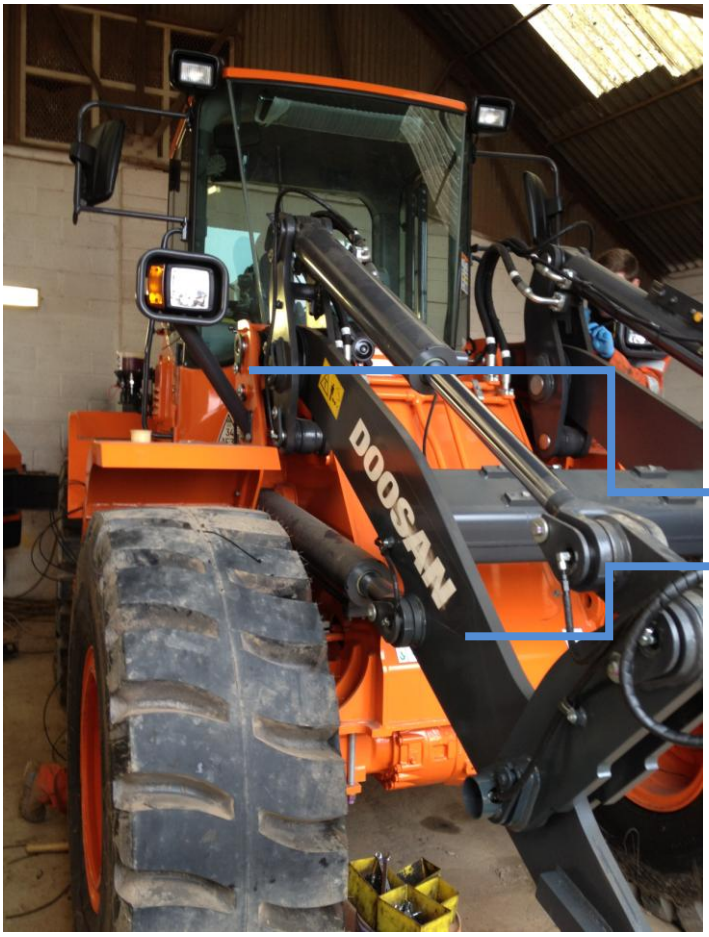
- Bearing points 2 and 11 lubricated from Secondary Valve 3.

- Lubricant Lubricated from SPL12 Secondary Valve 3:
  - ✓ Bearing points 3 and 10
  - ✓ Bearing points 5 and 8

An Overview Vehicle Layout

- Front Angle View of:-
  - ✓ Steering Section
  - ✓ Lift Section
  - ✓ Bucket Section

- Back Angle View of:-
  - ✓ Steering Section
  - ✓ 24Vdc HDI Pump



- Side Angle View of:-

✓ Steering Section

✓ Lift Section

- Side Angle View of:-

✓ Lift Section

✓ Bucket Section

- Steering Bracket is used to clip/hold the high pressure pipe in position at Steering Ram

Note:

1. As a guide on these typical applications, it is advisable that the pump default run time to be set to 5 minutes. Each individual installations/applications may require specific settings. We recommend that new applications be initially monitored to ensure adequate lubrication of all bearings on the system being supplied.

System Installation Accessories

	Stauff Clamp will be used most of the time during the installation period as a “Tube Support” in order to hold the tube in position.
	HLX-P-12, 12mm Plastic Helix
	PC-6-10, 6mm P-Clip PC-13-10, 13mm P-Clip
	STP-6-1, 6mm OD Steel Bundy Pipe

Note:

Components as shown above, were normally used during installation, there are more component accessories will be included in “Bill of Materials List” on the following page.

Bill of Materials

No.	Part No.	Description	Qty.
1	HDI 3201P/M	HDI Pump with Moulded Reservoir (1 Element/PRV)	1
2	LOGO/203/BRACKET	Logo/pump bracket	1
3	HDI-PB-24	24V Push Button (Green)	1
4	ELECTRICAL SWA 28RFP	Pushbutton connectors (SWA 28RFP)	4
5	FU11 FUSE HOLDER	Splash Proof Fuse Holder	1
6	FU2 5AMP	5 Amp Blade Fuse	1
7	HP 1/8 BSP GREASE NIPPLE	HP Grease Nipple (1/8")	1
8	HP TEE 1/8 BSP MMF PTFE TOP	HP Tee : 1/8"bsp m/m/f hp	1
9	SPL06K	SSV6K Divider Valve with Indicator Pin	1
10	SPL10	Divider Valve with 10 outlets	1
11	SPL12	Divider Valve with 12 outlets	2
12	SPL-BP12	SSV12 Weld Plate	2
13	SPL-CV-LL	6mm OD Check valve (for divider valves/blocks)	36
14	SPL-CN-6-LL	6mm OD Compression Nut for Check Valves	36
15	SPL-OL-6-LL	6mm OD Steel Olives (for the SPL Check Valves)	36
16	SPL-CP-10	SPL Divider Valve Blanking Plugs	4
17	CF6-1-1/8”	6mm OD x 1/8" BSP(M)	2
18	CF6-2-1/8”	6mm OD x 1/8" BSP (M) Elbow	30
19	SWV-2-6OD-1/8	6mm OD x 1/8"BSP Swivel (Push Fit)	2
20	CFU-6-6	6mm OD x 6mm OD	2
21	EXT-1/8-1	1/8" BSP- M x F Short Extension (23mm)	25
22	TML-8.6-FE	HP Sleeve (8.6mm Pipe)	31
23	TML-8.6-ST	HP Stud (8.6mm Pipe)	31
24	TML-8.6-2.3F	HP Hose 8.6mm OD (grease filled)	50
25	TSL-6.0-1.5F	6mm OD Nylon Pipe (Grease Filled)	100
26	TW-S	Cable Ties Small	100
27	HLX-P-12	Plastic Helix (12mm)- 25m coil	25
28	BOLTM6X10MM	M6 Socket Head (12mm)	20
29	Bolt M6x45mm	M6 Socket Head (45mm)	4
30	BOLTM6X70	M6 Socket Head (70mm)	2
31	213-12168-8	6mm Spring Washer (flat profile)	6
32	M10 X 6MM WASHERS	Penny Washer (6mm bore)	20
33	CAT/B/3	Bracket : Steering	2
34	TACKBLOCK	Threaded Weld Block (M6 Thread)	17
35	PROTECTION RING	Protection Ring for Plant (single slot)(circular)	4
36	STP-6-1	6mm OD Steel Bundy Pipe	2
37	PC-13-10	P Clip - 13mm	5
38	PC-16-10	P Clip - 16mm	5
39	PC-21-10	P Clip 21mm	4
40	PC-25-10	P Clip - 25mm	6
41	SC-9.5-S	Stauff Clamp 9.5mm Single	6

Components Layout Description